RI-341 – Hot Work and General Work Permits

15.0 HIGH HEAT WORK ENVIRONMENTS

When personnel are required to work in environments in excess of 90°F, refer to Appendix V—General Procedures for Working in High Temperature Conditions to determine what requirements, if any, apply.

The Shift Team Leader and Head Operator responsible for the work area should ensure that all practical methods of controlling the temperature are implemented in order to reduce the workers' exposure to heat. Examples are barriers to block radiant heat, forced ventilation to decrease ambient heat, and process changes to reduce heat generation.

15.1 A high-temperature Work Permit MFG-7240 will be initiated by the Head Operator when required by Appendix V.

15.2 When ambient temperatures are in excess of 120°F, a written rescue plan must be used. Refer to Appendix V for situations at lower temperatures where a written rescue plan is required.

1. The Maintenance Supervisor responsible for the work (or Operations Supervisor if Maintenance is not involved) will initiate the written rescue plan. Chevron Fire Dept. and Operations personnel will assist in writing the rescue plan. Use the checklist guide in Appendix VII to prepare the written plan.

Appendix V – General Procedure for Working in High Temperature Conditions

General Principle: At no time should the worker in a hot area feel compelled to "stay with the job" if he or she is fatigued or if signs of heat stress are present.

Conditions / Requirements	(1) 90-100°F Vigorous Activity[1]	(2) 100-120°F & conditions other than columns 3 & 4	(3) 100-120°F Elevated (over 6 ft.) with Vigorous Activity[1]	(4) 100-120°F Confined	(5) 120-160°F All cases
Monitor ambient temperature[2]	•	•	•	•	•
Permit required (see Appendix IX)			Only if job longer than 15 minutes	•	•
Heat stress/heat stroke training[3]	•	•	•	•	•
Worker(s) cleared for respirator use	•	•	•	•	•
Liquids: Water or Gatorade prior to and during work	•	•	•	•	•
At least one person present equipped with radio			•	•	•
Safety Operator trained in heat stress/stroke standing by. Functions: communications, rescue (in non-confined space only).			Only if job longer than 15 minutes	•	•
Job Hazards Analysis (JHA) completed			Only if job longer than 15 minutes	•	•
Written rescue plan, developed based on Rescue Plan Checklist in Appendix VIII			Only if job longer than 15 minutes	•	•
EMT standing by. Functions include: • Monitors heart rate, body temp by ear,[4] workers' general condition; rescue • Adjusts work/rest periods to maintain heart rate below 120 beats per minute.[5] • Ensures worker leaves high temp area if internal body temperature exceeds 100.4°F.[6] • Rescue			Only if job longer than 15 minutes	•	•
Minimum of 2 people covering the job.			Only if job longer than 15 minutes	Only if job longer than 15 minutes	•
Cool vests or suits[7] (issues ok if safe to wear).			Optional	100-110°F: opt 110-120°F: mnd	•
Consider SCBA for temperatures over 140°F.					•
Refinery Business Manager reviews job with supervisor for compliance with Section 15.0 of RP2000					•

Do not send workers into areas with an ambient temperature over 160°F[8]

For workers in heavy gear (e.g., mud suits), consider increasing requirements to level described in columns further to the right.

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[1] Examples of vigorous activity are ditch digging, sledgehammer/hammer wrenching, pulling underground cables through conduit, using large hydraulic/pneumatic tools, building staging.

[3] Safety Operator will measure/monitor ambient temperature as needed to determine which column heading applies. (Typically, Safety Operator will assess ambient temperature at start of job, and at end of each work period when worker leaves high-temperature area to rest: temperature may be read from the clip-on thermometers that workers may wear. These are available from Central Tool Room.)

[5] Includes instruction on how to recognize the signs and symptoms of heat stroke and heat stress. The 11-minute video, "Heat Stress" provides this information. Click on video link in this document or enter the following URL into your internet browser:
mms://ris84.intz3web8/refinerymedia/training/Heat_Stress.wmv

[4] Initial monitoring should be done within first 15 minutes of work time. Further monitoring will be done during each rest period. HMT will determine length of work and rest periods, as described in footnote 5. Also, HMT will have checklist as a guideline for their responsibilities.

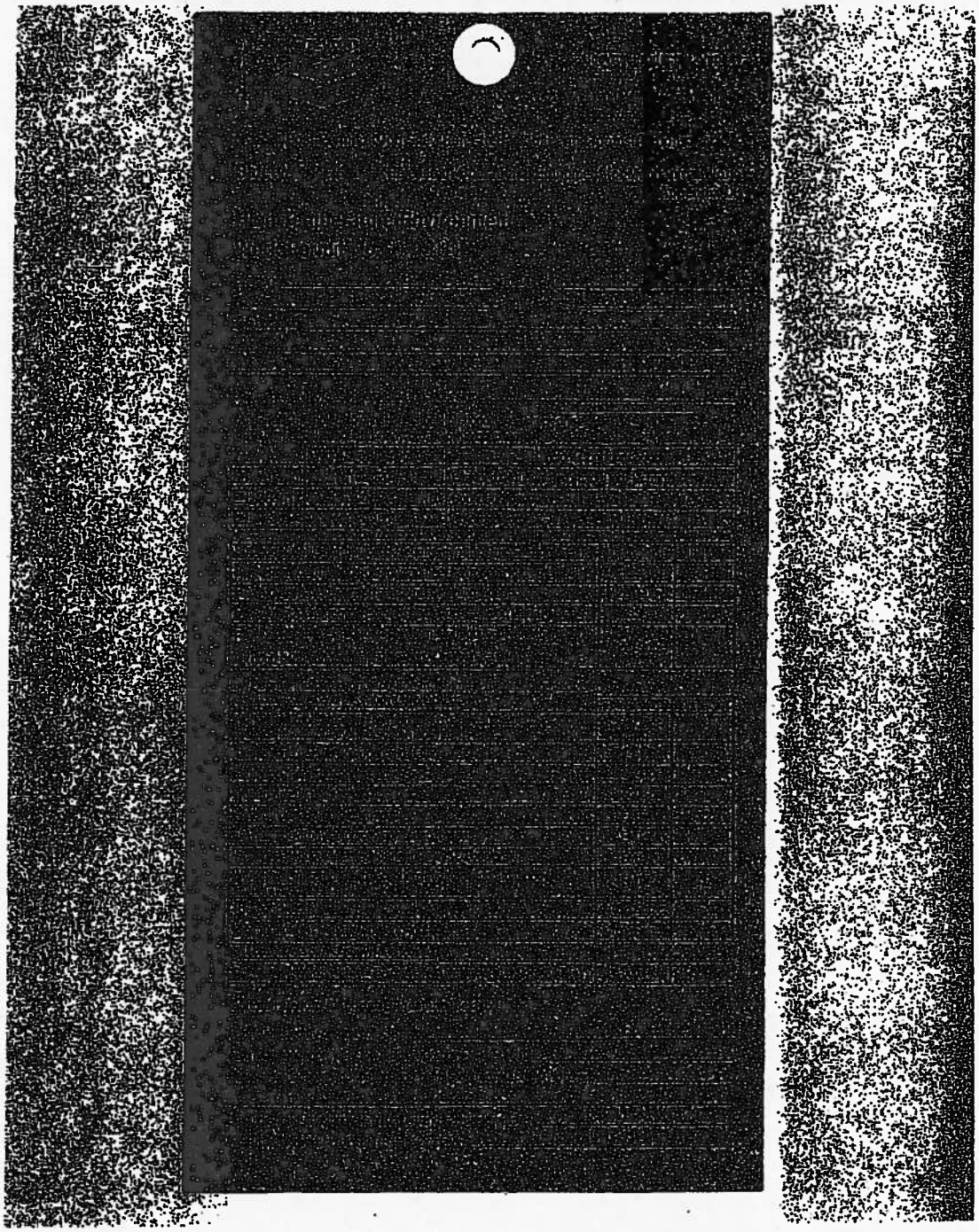
[5] As temperature rises or activity increases, work periods need to be shortened and rest periods in a cool area lengthened.

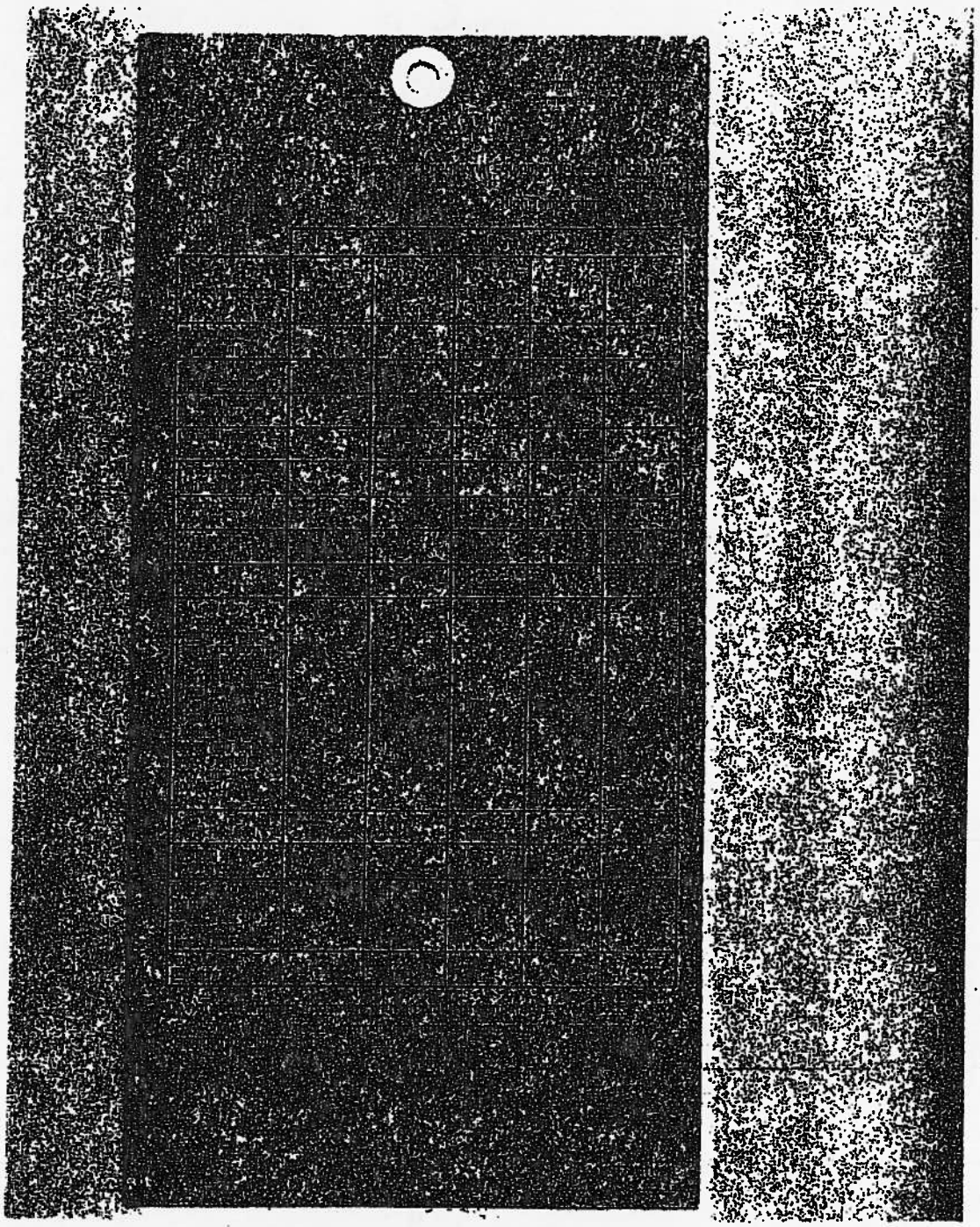
[6] Worker must move to cool area to rest, drink liquids; do not re-enter until worker's body temperature drops to 99°F and worker feels able to resume work. Workers that are not able to resume work should consult the Refinery Clinic (if during off-hours, schedule visit for when Clinic is open).

[7] Nomex should be worn with cool suits/vests. The most effective cooling will be achieved by wearing the cool suits/vests under the Nomex. Larger size Nomex can be borrowed from CTR to accommodate the additional bulk.

[8] Reference Section 3.0 of this Instruction for any variances to this Appendix.

Appendix VI - High Temperature Work Permit
MFG-7240





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Appendix VII

CHECKLIST FOR DEVELOPING RESCUE PLAN FOR HIGH TEMPERATURE WORK ENVIRONMENTS

_____ List the type of emergencies that could occur.

_____ Briefly outline actions to be taken for rescue from a high-temperature environment.

_____ Qualified rescue personnel must tour work area prior to beginning any work.

_____ List rescue equipment need and where it will be located.

_____ Discuss methods of reporting an emergency.

_____ List emergency procedures and escape routes.

_____ List rescue and first aid response procedures.

_____ Proper amounts of liquid available at the work site.

_____ Radio available at the work site.

_____ Proper PPE available at the work site (i.e., cool vest, gloves, wooden clogs, etc.).

Summary of *Heat Stress Prevention* Training Video
(part of the High Heat Work Permit procedure)

1. Heat stress is a health threat and the effects can be fatal.
2. Heat stress can happen both outdoors and indoors.
3. Sources of heat in the workplace: body heat and external heat.
4. External factors: Air temperature, air movement, humidity, and radiant heat.
5. The body's natural heat control measures: increased blood flow and sweating.
6. Heat moves from hot to cold. If the surrounding area is cooler than your body, your body's heat will transfer to the surrounding area. If the surrounding area is hotter than your body, your body will absorb heat from the surrounding area.
7. When humidity is high sweat evaporation slows down or stops completely and sweating will not cool the body.
8. If the body can't remove heat via increased blood flow and sweating the body will begin to store the heat. This can lead to the most serious health threats, including heat stroke.
9. Other heat stress health effects include heat exhaustion and heat cramps.
10. Heat cramps are muscle spasms in the arms, legs, and abdomen caused by a loss of fluids in the muscles.
11. Heat exhaustion develops when the body loses more fluids through sweating than what it takes in.
12. Symptoms of heat exhaustion include profuse perspiration, paleness of the skin, headaches, and loss of balance.
13. Treatment for heat exhaustion includes: move the person to a cooler area, have the person sit with their feet up or lie down, and have them slowly drink liquids.
14. Heat stroke occurs when the body can no longer deal with the stress caused by heat.
15. Symptoms of heat stroke include lack of sweating, rise in body temperature (105 degrees or more), hot and dry skin, red spots on the skin, nausea, and unconsciousness.
16. Treatment for heat stroke includes: call for medical help, cool the person down immediately, pour water on them, fan or sprinkle water on them.
17. The frequency of accidents tends to rise as the temperature rises. Your physical performance and mental alertness may be reduced by heat.
18. Heat illness prevention measures: become used to the climate, pace yourself until your body becomes used to the increased heat, increase your liquid intake to prevent dehydration, don't just drink liquids when you are thirsty but do it at regular intervals, try to perform your most physically challenging tasks during the time of day when temperatures are not at their highest, if working indoors consider using fans or ventilation systems to create air movement (air movement helps cool the body).

CONTINUATION OF RICHMOND REFINERY'S HIPP ELEMENTS

Provision of Water

Chevron provides access to potable drinking water at all work locations. Water resources are available throughout the Refinery and the Refinery frequently communicates the need for all personnel to consume copious amounts of water to ensure proper hydration in all work environments.

Access to Shade

All Chevron personnel have access to shade in various forms, including air conditioned buildings, air-conditioned vehicles, canopies, umbrellas, trailers, sheds (or other partial or temporary structures) that are mechanically ventilated or open to air movement, and trees. Managers and employees are taught to look out for each other and any person that is identified as potentially suffering from heat illness, or believing a preventative recovery period is needed, is provided access to an area with shade. Access to shade is permitted at all times.

Training

Heat illness training is provided through periodic safety, and health and wellness, meetings and presentations. The content of these meetings and presentations include:

- How heat related illnesses are a health threat and its effects can be fatal.
- Heat stroke, heat exhaustion, heat syncope, heat cramps, and heat rash: their definitions, symptoms, and first-aid measures.
- Example content for Heat Stroke:
  - Definition: occurs when the body can no longer control its temperature.
  - Symptoms: lack of sweating, rise in body temperature (105 degrees or more), hot and dry skin, chills, confusion/dizziness, nausea, and unconsciousness.
  - First aid measures: call for medical help, cool the person down immediately, soak their clothes with water, sponge or shower with water, fan their body.
- Heat illness prevention measures – Hydrate, Assess, Acclimate: become used to the climate, pace yourself until your body becomes used to the increased heat, increase your liquid intake to prevent dehydration, don't just drink liquids when you are thirsty but do it at regular intervals.

Viewing of a heat stress prevention training video is also required for all personnel involved in a high heat work permitted job. See attachment 2B for a summary of the training video.

Emergency Response

Chevron has procedures for responding to symptoms of possible heat illness. These include: how emergency medical services will be provided should they become necessary, how to contact emergency medical services, and how it is ensured that, in the event of an emergency, clear and precise directions to the work site can and will be provided as needed to emergency responders.

Chevron Richmond Refinery has on-site Emergency Medical Technicians (EMTs) available at all times. There is also an on-site medical clinic staffed by a nurse practitioner, with access to a medical doctor.

As part of the high heat work permit procedure, when ambient temperatures exceed 120°F (and at lower temperatures in some cases) an EMT must be standing by in case rescue is needed. The EMT will also monitor heart rate and body temperature, adjust work/rest periods to maintain an acceptable heart rate, and ensure a worker leaves a high temperature area if their internal body temperature becomes elevated.

As part of the high heat work permit procedure, when ambient temperatures exceed 120°F (and at lower temperatures in some cases) a written rescue plan must be developed. Attachment 2A includes the written rescue plan checklist.